

initial deployment and already have leases allowing the downstream transmission of broadband services from the supercell site, operators can rapidly turn their own 2.1 GHz channels around for upstream use and deploy services with a minimum of delay. Indeed, because system operators generally control the 2.1 GHz band, the operators of the vast majority of systems across the country have entered into a series of similar inter-market interference coordination agreements that require the use of MDS channels 1 and 2/2A as the initial channels deployed for upstream communications wherever possible.

Finally, the predominance of the 2.1 GHz band for widespread upstream deployment is a direct result of the Commission's own licensing policies. Long before the *Two-Way Report and Order* was adopted, the Commission was issuing licenses for upstream operations on MDS channels 1 and 2/2A.^{109/} And, once it had adopted the *Two-Way Report and Order* and designated August 14-18, 2000 as the initial filing window for two-way MDS/ITFS applications, the Commission implemented special procedures to provide for the expedited licensing of upstream facilities on MDS Channels 1 and 2/2A.^{110/} Sprint, WorldCom, Nucentrix and others took advantage of these opportunities for securing early authorizations to utilize the 2.1 GHz band for upstream communications, and have invested substantial amounts to deploy broadband operations in those bands.

the 2.1 GHz band will raise the particularly difficult issues discussed *infra* at Section II. E.

^{109/} For example, People's Choice TV Corp., which is now a subsidiary of Sprint, received authorization to construct and operate upstream facilities in Detroit, Houston and Phoenix using MDS channels 1 and 2.

^{110/} *Mass Media Bureau Provides Further Information on Application Filing Procedures and Announces Availability of Electronic Filing for Two-way Multipoint Distribution Service and Instructional Television Fixed Service*, Public Notice, DA 00-1481 (rel. June 30, 2000).

WCA is particularly troubled that the *NPRM* does not fully recognize prior Commission determinations regarding the future of the 2.1 GHz band. As is implicitly recognized by Paragraph 50 of the *NPRM*, when the Commission first explored the possibility of reallocating the band for new uses in the *Emerging Technologies* proceeding, it chose not to do so. Specifically, the Commission found that MDS “should be afforded sufficient time to develop” and that, even were the Commission disposed towards relocation, no relocation spectrum existed.^{111/} Regarding the 2160-2162 MHz portion of the band that is allocated as the upper portion of MDS channel 2 in fifty large metropolitan areas, the Commission grandfathered licensees and applicants who either had secured licenses or had applied for the channel prior to January 16, 1992,^{112/} and committed that future allocations would “protect operations of incumbent licensees from harmful interference caused by operations of emerging technology licensees.”^{113/} Now that MDS usage of the full 2150-2162 MHz band has emerged as part of an advanced wireless communications service, it would be particularly distressing were the Commission to either reallocate any portion of the spectrum or otherwise preclude the use of the entire 2150-2162 MHz band for broadband applications either by current licensees or MDS auction winners.^{114/}

^{111/} *Redevelopment of Spectrum to Encourage Innovation in The Use of New Telecommunications Technologies*, 7 FCC Rcd 6886, 6889 (1992) (“*Emerging Technologies Order*”).

^{112/} *See id.* at 6889 n.22.

^{113/} *Id.* at 6890.

^{114/} WCA notes that while the *NPRM* suggests that “incumbents in the . . . 2160-2165 MHz bands can be accommodated in the 4 GHz, 6 GHz, 10 GHz and 11 GHz bands,” it is apparently referencing incumbent point-to-point users and not MDS licensees. *See NPRM* at ¶ 56. Just as the Commission has determined that there is no spectrum above 3 GHz to which MDS channel 2 licensees can migrate, there is no spectrum to which those licensees can migrate their use of the 2160-2162 MHz band. Moreover, it is patently obvious that forcing a Balkanization of MDS channel 2 into two bands will impose extraordinary costs for equipment

3. Forced Relocation Of 2.1 and 2.5 GHz Incumbents To Other Bands Or A Reduction In Spectrum Cannot Be Squared With The Commission's Auction Of MDS BTA Authorizations And Will Have An Adverse Impact On Future Auctions.

As it contemplates the issues raised in the *NPRM*, the Commission must not forget the substantial, unprecedented legal and public policy implications of reauctioning the spectrum in the 2.1 and 2.5 GHz bands that was bought and paid for at the Commission's 1996 nationwide auction of MDS Basic Trading Area ("BTA") authorizations.^{115/}

As is recognized in the *FCC Interim Report*, the holder of an MDS BTA authorization has secured through the auction the exclusive right to apply for authority to construct and operate new facilities within its BTA, subject to compliance with the Commission's interference protection rules.^{116/} It must be emphasized that the auction winner did not merely secure rights to the traditional MDS channels (channels 1 and 2/2A in the 2.1 GHz band and channels E1-E4, F1-F4 and H1-H3 in the 2.5 GHz band). To the contrary, an MDS BTA authorization holder also purchased the sole right to construct and operate commercial stations on up to eight available ITFS channels within its BTA.^{117/} Moreover, BTA auction winners secured the rights to use the available MDS and ITFS

and delay the launching of new services using MDS channel 2 – all to the detriment of the Commission's effort at promoting broadband deployment.

^{115/} Under the competitive bidding procedures established for the MDS BTA auction, the Commission auctioned one blanket MDS authorization for each of the 487 BTAs in the United States, and six additional BTA-like geographic areas covering territories outside the United States. *See Amendment of Parts 21 and 74 of the Commission's Rules with Regard to Filing Procedures in the Multipoint Distribution Service and in the Instructional Fixed Television Service and Implementation of Section 309(j) of the Communications Act*, 10 FCC Rcd 13821 (1995) (the "MDS Auction Reconsideration Order").

^{116/} *See* 47 C.F.R. §21.903(b).

^{117/} *See Amendment of Parts 21 and 74 of the Commission's Rules with Regard to Filing Procedures in the Multipoint Distribution Service and in the Instructional Fixed Television Service and Implementation of*

spectrum in a flexible manner, subject only to compliance with or waiver of the Commission's technical rules.^{118/}

Simply stated, any attempt by the Commission to now rescind these rights and reauction the 2.1 and the 2.5 GHz bands in the hope that they *might* be used for 3G would be patently unfair to successful bidders at the MDS BTA auction and, equally important, would be impossible to square with the fundamental public interest objectives of the auction process. The Commission is well aware that MDS BTA authorization holders (and their successors in interest) have spent billions of dollars on acquiring spectrum (including the acquisition of incumbent MDS stations and the leasing of MDS and ITFS stations) and on deploying facilities in the 2.1 and 2.5 GHz bands in reliance on rights sold by the Commission at the MDS BTA auction. Certainly, had successful bidders at the MDS BTA auction known that the Commission might ultimately reclaim the 2.1 and 2.5 GHz bands and put those frequencies up for reauction, they certainly would have adjusted their bids and subsequent investments in MDS/ITFS deployment to account for the risk that the Commission may eventually take back and resell the 2.1 and 2.5 GHz bands.

The competitive bidding process is designed to "provide[] incentives for licensees of spectrum to compete vigorously with existing services, develop innovative technologies, and provide

Section 309(j) of the Communications Act, 10 FCC Rcd 9589, 9612 (1995) (the "*MDS Auction Report and Order*"). Specifically, commercial entities may apply for up to eight ITFS channels in a market so long as after licensing of those eight channels, an additional eight ITFS channels remain available for use. *See* 47 C.F.R. § 74.990(a),(b).

^{118/} *MDS Auction Report and Order*, 10 FCC Rcd at 9619 ("[U]nless otherwise directed or conditioned in the applicable instrument of authorization, Multipoint Distribution Service stations may render any kind of communications service consistent with the Commission's rules on a common carrier or non-common carrier basis."); *MDS Auction Reconsideration Order*, 10 FCC Rcd at 13824 ("[T]he present regulations allow for the use of MDS frequencies for 'any kind of communications service' . . . [and] applicants may need to seek waiver of MDS technical rules precluding alternative uses.") (internal citations omitted).

improved products to realize expected earnings.”^{119/} Indeed, the governing statute, Section 309(j)(3) of the Communications Act, directs the Commission to auction spectrum in a manner which promotes, *inter alia*, “the development *and rapid deployment* of new technologies, products, and services for the benefit of the public, including those residing in rural areas.”^{120/} Repossession of the 2.1 and 2.5 GHz bands for reauction would defeat this objective entirely, since it would halt any deployment of MDS/ITFS fixed wireless broadband service (including deployment to rural areas).^{121/}

Incentives to deploy competitive services disappear where the Commission raises even the possibility of reauction, since no license holder can be reasonably expected to make the enormous investments required for developing innovative, competitive services where there is even the slightest possibility that its spectrum might be returned to the auction block at a later date. Consumers, ultimately, pay the price of less competition or delayed competition.^{122/}

Thus, even if the Commission were to overcome the technical, financial, logistical and legal issues associated with clearing MDS/ITFS incumbents out of the 2.1 and 2.5 GHz bands and

^{119/} *FCC Report to Congress on Spectrum Auctions*, 13 FCC Rcd 9601, 9616 (1997).

^{120/} 47 U.S.C. § 309(j)(3)(A) (emphasis added).

^{121/} It is likely that relocated MDS/ITFS incumbents would contend that a reauction of the 2.1 and 2.5 GHz bands amounts to a regulatory taking without just compensation in violation of the Fifth Amendment. Given the financial commitments that MDS/ITFS operators have made over the past several years in developing their facilities for fixed wireless broadband services, all in reliance on rights they acquired at the MDS BTA auction, any repudiation of those rights that results in substantial economic losses is subject to a constitutional challenge.

^{122/} This is especially true when one considers that, since the Commission is not proposing to reallocate aside the 2.1 and 2.5 GHz bands exclusively for 3G and instead would reauction that spectrum generally for “advanced wireless services,” a successful bidder at reauction could very well use the 2.1 and 2.5 GHz bands *to provide the same fixed wireless broadband services that MDS/ITFS operators are already providing now*. It would border on ludicrous for the Commission to stop MDS/ITFS deployment in its tracks and relocate MDS/ITFS incumbents solely to provide another entity with an opportunity to provide identical services over the same spectrum.

reauctioning their spectrum for 3G, it could not avoid the inevitable adverse impact that a reclaiming and reauction of the 2.1 and 2.5 GHz bands would have on future investments based on auctioned licenses and, indeed, on future auctions themselves. Once the Commission establishes a precedent for repossessing and reauctioning spectrum to accommodate some other wireless service, there will be no turning back - those who have already won auctioned licenses, and those who are contemplating participation in future auctions, will undoubtedly take note of the Commission's actions and reassess their willingness to invest the substantial sums of money now required to obtain and develop wireless licenses through the competitive bidding process.^{123/} As a result, the very entities that the Commission hopes will participate in spectrum auctions, *i.e.*, those that are "most likely to offer new, better, and lower cost services,"^{124/} will be discouraged from doing so, a result which in no way serves the public interest.

E. THE COMMISSION'S EXISTING RELOCATION PROCEDURES FAIL TO ADEQUATELY ADDRESS THE MYRIAD OF NOVEL ISSUES RAISED BY THE RELOCATION OF MASS MARKET SERVICES BEING DELIVERED OVER MULTIPLE OWNED AND LEASED CHANNELS.

Notwithstanding the Commission's own recognition of the unique and substantial benefits provided by MDS/ITFS fixed wireless broadband service in the 2.1 and 2.5 GHz bands, the *NPRM* requests comment on the feasibility of applying its relocation procedures designed for fixed microwave service incumbents in the 2165-2200 MHz and 2110-2115 MHz bands to any potential relocation of MDS/ITFS incumbents in the 2500-2690 MHz band.^{125/} In addition, the Commission

^{123/} Cf. *FCC Report to Congress on Spectrum Auctions*, 13 FCC Rcd 9601, 9637 (attributing low bids for WCS licenses to uncertainty surrounding the auction).

^{124/} *Review of the Pioneer's Preference Rules*, 9 FCC Rcd 4055, 4059 (1994).

^{125/} See *NPRM* at ¶ 64.

requests comment on whether it should apply those same procedures to relocation of any incumbent user of the 2110-2150/2160-2165 MHz bands, including MDS incumbents using the upper two MHz of MDS channel 2 (the 2160-2162 MHz band).^{126/} For the reasons set forth below, even were the Commission able to identify comparable spectrum to which MDS/ITFS could be relocated (which it cannot), the Commission's existing relocation procedures are grossly inadequate for application to relocation of MDS/ITFS services in the 2.1 and 2.5 GHz bands, and any attempt to graft those procedures onto the MDS/ITFS model will only further exacerbate the enormous economic and public interest costs associated with relocating MDS/ITFS to other spectrum.

It is well established that the fundamental objective of any relocation policy is to make the victim of the forced migration "whole" in all respects.^{127/} The Commission's relocation policies have, to date, been applied to services, such as point-to-point microwave, broadcast auxiliary service ("BAS") and land mobile radio, that are fundamentally different from services being offered over MDS/ITFS.^{128/} As a result, those policies fail to address considerations that may not have been relevant in the past, but are highly relevant to making existing MDS/ITFS licensees, the system operators who lease MDS/ITFS channels, and the public whole. Those considerations include:

^{126/} *Id.* at ¶ 55.

^{127/} See, e.g., *Amendment to the Commission's Rules Regarding a Plan for Sharing the Costs of Microwave Relocation*, 11 FCC Rcd 8825, 8843 (1997) ("*Microwave Cost-Sharing Order*") ("our goal is to ensure that incumbents are no worse off than they would be if relocation were not required").

^{128/} See, e.g., *Emerging Technologies Order*, 7 FCC Rcd 6886 (1992); *Establishment of Policies and Service Rules for the Mobile Satellite Service in the 2 GHz Band*, 15 FCC Rcd 16127 (2000); *Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile-Satellite Service*, 15 FCC Rcd 12315 (2000); *Amendment of Part 90 of the Commission's Rules to Implement the 1900-2000 kHz Frequency Band in the Radiolocation Service*, PR Docket No. 84-874, FCC 85-574, 59 R.R.2d 196, 50 Fed. Reg. 46048 (rel. Oct. 31, 1985).

- A relocation of MDS/ITFS would represent the first time that the Commission would be relocating a service in which licensees routinely lease capacity to system operators who invest substantial sums in reliance on the availability of that capacity. Thus, the Commission's policies would require a substantial overhaul to assure that the lessees are made whole, as well as the MDS/ITFS licensees. Particularly at a time when the Commission is attempting to promote the use of secondary market transactions such as leasing to alleviate spectrum shortages, it would be unthinkable for the Commission to leave lessees without redress in the case of a forced relocation.^{129/}
- Relocation would suspend deployment of MDS/ITFS broadband service until new equipment is developed and manufactured and the relocation band is identified and cleared of incumbent users -- both of which will take years.
- MDS/ITFS would be the first relocated service that is used to provide service directly to consumers on a mass-market basis. Since relocation is unlikely to commence for several years (as it is unlikely that relocation would be to spectrum for which equipment is readily available),^{130/} in the interim, system operators make continue to deploy facilities across the United States and signed up broadband customers at a very aggressive pace. The Commission itself has cited to one estimate indicating that there will be as many as 1,200,000 residential MDS/ITFS broadband subscribers within two years.^{131/} Operators will incur extraordinary expenses to notify potentially millions of subscribers that their customer premises equipment must be replaced, to schedule appointments for such replacement, and to then supervise and successfully complete potentially millions of truck rolls and equipment change-outs. In addition to the costs associated with acquiring new customer premises equipment to replace existing equipment (which obviously must be reimbursed), operators will incur huge expenses in connection with the diversion of their own personnel from the task of marketing and installing new subscribers to the task of relocation. Although in the past the Commission has not provided for reimbursement of internal costs, such a policy would be grossly unfair under these circumstances.^{132/}

^{129/} *Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets*, WT Docket No. 00-230, FCC 00-402 (rel. Nov. 27, 2000).

^{130/} The HAI Study concludes that "manufacturing lead times required to redesign and produce equipment in new bands may reasonably be expected to be two to three years." HAI Study, at 9.

^{131/} *FCC Interim Report* at 21 n.26 (citing Jarich and Mendelson, "U.S. Wireless Broadband: LMDS, MMDS and Unlicensed Spectrum," The Strategis Group, Inc. (Feb. 17, 2000).

^{132/} Cf. 47 C.F.R. § 101.75(a)(1) (no reimbursement required for "internal resources devoted to the relocation process"). As recognized in the *FCC Interim Report*, the sheer scope of this undertaking is staggering. See *FCC Interim Report* at 60 ("Analyzing the licensing data currently shows that the number of licensed

- Because MDS/ITFS operators do not have unlimited resources to devote to relocation *and* expanding their existing operations, every resource that an MDS/ITFS operator devotes to relocation is one *not* devoted to marketing MDS/ITFS fixed wireless broadband service aggressively in direct competition with cable modem and DSL service (including DSL provided by the ILECs who, through their wireless subsidiaries and affiliates, are the very same entities attempting to relocate MDS/ITFS incumbents out of the 2.1 and 2.5 GHz bands). Because the personnel that have been hired, trained, and paid to add new subscribers will be diverted to the relocation effort, MDS/ITFS-based broadband systems will be unable to grow and will inevitably lose potential subscribers to competing cable modem and DSL services. Compensation for those lost subscribers will have to be provided to system operators and to MDS/ITFS licensees (who generally receive lease fees based either on the number of subscribers to the system or on the revenue of the system). In addition, compensation will have to be provided for those subscribers who resist the effort to change-out equipment and cannot be served as a result.
- Customer premises equipment will be more expensive than the CPE that would have been required had MDS/ITFS remained at its current allocation because of the requirement to operate at higher frequencies, and because manufacturers will not have had time to develop cost-effective second generation equipment or to capture economies of scale.^{133/} Provisions will have to be made to reimburse those ongoing increased costs.
- Although retail sales of customer premises equipment is not yet a component of today's MDS/ITFS-based broadband services, many operators are planning on such sales in the near future. As a result, the Commission's relocation policy will need to be expanded to assure that consumers who have purchased customer premises equipment are made whole.
- Because lessees may choose not to lease the relocation spectrum to which MDS/ITFS licensees are moved, the Commission must assure that those licensees are fully

transmitters per one 6 megahertz channel averages over 4000 nationwide. . . It is important to note that these numbers are based on current ITFS/MDS deployment and the majority of these stations are incumbent operators. As geographic MDS licensees begin deploying two-way service, the number of stations will increase. This increase will be substantial because with two-way service, each subscriber's location becomes an additional transmit site for upstream traffic. Therefore, for every transmitter that a geographic MDS licensee currently has licensed, there is the potential for many times that number to ultimately exist.”).

^{133/} See HAI Study at 9 (“Beyond about 3 GHz, equipment designers are forced to different technologies and lower integrated circuit device densities for radio frequency parts, which profoundly increases manufacturing cost and equipment prices.”).

compensated for leasing revenue lost as a result of the relocation. This is particularly critical for ITFS licensees, since it is the leasing revenue that supports the educational programs of many ITFS licensees. In addition, those ITFS licensees that find themselves unable to lease due to a relocation will also have to be fully compensated for the equipment and the technical and operational support that they will no longer have access to as a result of the relocation. Moreover, many will need to be provided with access to high-speed broadband facilities to compensate them for the loss of their ability to utilize the shared MDS/ITFS-based broadband network as part of their leasing compensation.

- An MDS/ITFS system (whether a broadband system or a video system) is comprised of facilities licensed to multiple licensees operating on multiple channels. Historically, the Commission has utilized a “selective relocation” policy under which the newcomer was free to pick and choose the facilities it would relocate (so long as no interference was caused).^{134/} Such a policy could be disastrous here, as it threatens to Balkanize MDS/ITFS deployment into multiple bands that would vary from market-to-market.^{135/} The proponent of relocation must be required to relocate all facilities, or none (absent an agreement by the system operator to the contrary).
- Relocation is certain to impose upon MDS/ITFS system designers the need to utilize additional cells in order to provide comparable coverage to a comparable number of subscribers. In addition to the additional equipment, operational and maintenance expenses that will be incurred (and that will have to be fully reimbursed), it will be necessary for the party forcing the relocation to provide fiber or microwave backhaul facilities that have not heretofore been required by the circumstances presented by prior relocations.

Finally, it must be noted that WCA is simply not in a position at this juncture to provide a meaningful response to the Commission’s request that commenting parties provide information about “the type and amount of costs to relocate incumbent MDS/ITFS operations.”^{136/} Many of these

^{134/} See *Microwave Cost-Sharing Order*, 11 FCC Rcd at 8845; see also 47 C.F.R. § 101.75(a).

^{135/} Indeed, the Commission adopted its “selective relocation” policy because, among other things, many point-to-point microwave incumbents were already operating networks that consisted of both 2 GHz and 6 GHz links, and thus were already equipped for operation on relocation spectrum. *Microwave Cost-Sharing Order*, 11 FCC Rcd at 8845. Obviously, that assumption cannot be made with respect to MDS/ITFS incumbents.

^{136/} *NPRM* at ¶ 65.

costs are impossible to calculate unless specific relocation spectrum has been identified. First, the costs of relocation will inevitably depend upon the propagation characteristics of the new band (which will drive the number and complexity of the new facilities that will have to be deployed to provide comparable service), the amount of spectrum available in the new band, and the extent to which equipment designed to operate in the new band is more costly than the equipment being used to deploy services in the 2.1 and 2.5 GHz bands. Moreover, as noted above, many of the costs will be dependent upon when the relocation actually occurs. That, in turn, will depend upon whether the Commission must clear existing users from the relocation band and the time necessary to develop new equipment capable of providing broadband services in the relocation band.

F. IT IS NOT NECESSARY FOR THE COMMISSION TO REALLOCATE ANY PORTION OF THE MDS/ITFS 2.1 AND 2.5 GHz BANDS TO FACILITATE THE LAUNCH OF 3G SERVICE IN THE UNITED STATES.

To review, the United States' position and the ITU's adoption thereof at WRC-2000, the *FCC Interim Report*, the Commission's own precedent, and the analysis set forth in Sections II. A-E above establish the following:

- MDS/ITFS fixed wireless broadband service in the 2.1 and 2.5 GHz bands is an essential component of the Commission's broader effort to accelerate deployment of broadband services;
- the ability of MDS/ITFS fixed wireless broadband service to reach unserved or underserved areas in a timely and cost-efficient manner is inextricably tied to the unique propagation characteristics of the 2.1 and 2.5 GHz bands;
- any reduction in the amount of spectrum available to MDS/ITFS-based networks at 2.1 or 2.5 GHz would have a significant adverse impact on the economic viability of MDS/ITFS fixed wireless broadband service, and thus would endanger the deployment of broadband service that the Commission seeks to promote;
- no suitable relocation spectrum for MDS/ITFS incumbents exists;

- any relocation of MDS/ITFS incumbents out of the 2.1 and 2.5 GHz bands to facilitate a reauctioning of their spectrum would represent an unprecedented forced displacement of a mass market, consumer based broadband service, and as such would cause inestimable damage to MDS/ITFS operators, consumers, educators, students and the public interest in general, and would have significant legal and public policy consequences; and,
- the Commission cannot re-take and re-auction the 2.1 and 2.5 GHz bands without infringing upon the rights it has previously sold to MDS BTA auction winners and undermining future auction efforts.

As a result, the questions now before the Commission are these: are the benefits (if any) of clearing the 2.1 and 2.5 GHz bands for 3G services outweighed by the economic and public interest costs of crippling the deployment of MDS/ITFS fixed wireless broadband service to unserved and underserved markets, or is there a readily achievable, “win-win” solution that will provide additional spectrum for 3G *and* fully preserve the 2.1 and 2.5 GHz bands for MDS/ITFS fixed wireless broadband services? For the reasons set forth below, the answer is simple – there is ample spectrum outside the 2.1 and 2.5 GHz bands that is already or soon will be available for 3G services, and thus there is no need for the Commission to adopt the “either/or” solution of displacing MDS/ITFS incumbents out of the 2.1 and 2.5 GHz bands and reauctioning that spectrum for 3G services.

1. Ample Spectrum in Other Frequency Bands is Available and May be Auctioned for 3G Services Immediately.

In WCA’s view, there is ample spectrum available to the mobile industry to provide for reasonable 3G deployment, even without any reallocation of the 2.1 and 2.5 GHz bands.^{137/}

^{137/} WCA notes that there is increasing skepticism regarding the demand for 3G services. *See, e.g.*, “Mobile Phone Industry Overview,” Morgan Stanley Dean Witter Equity Research Report, at 1 (Jan. 19, 2001) (“We expect to see a slow take-off of GPRS phones in 2001 . . . We think 3G phones may struggle to differentiate themselves from GPRS phones, and may still be less than 15% of industry shipments by 2005.”); “Infrastructure - High Noon as the Big Guns Aim for Wireless Market,” *Network News*, at 20 (Nov. 8, 2000) (“Some analysts are warning that there will be little demand for the next generation of services, and indeed many makers of mobile phones and the processors they use have issued cautious forecasts.”).

First, as is recognized by the *NPRM*, there are large blocks of spectrum that are currently being used by first generation and second generation mobile services that can be used to provide 3G services as well:

the ITU has identified for possible 3G systems several frequency bands, portions of which in the United States (approximately 210 MHz of spectrum) are already allocated or in use for Mobile and Fixed Services. The 806-960 MHz and the 1850-1910/1930-1990 MHz bands, which are currently used by cellular, SMR, and broadband PCS services, may eventually be transitioned for use by advanced wireless systems.^{138/}

Indeed, several of the Nation's largest wireless carriers have already indicated that they can offer 3G services without additional spectrum.^{139/} And, the re-auction of 40 MHz of broadband PCS Blocks C and F that was completed on January 26, 2001 makes it possible for other licensees to immediately put this spectrum to use for advanced wireless systems.^{140/}

Moreover, as the *NPRM* also acknowledges, there is a substantial amount of spectrum that is about to become available for 3G usage, including the 2110-2150 MHz band that the Commission is in the process of allocating for flexible use and that must be auctioned by September 30, 2002,^{141/}

^{138/} *NPRM* at ¶ 34.

^{139/} See *3G Becomes Murky* at B4, col. 3 (citing the Chief Technology Officer of Sprint PCS as stating "Sprint already owns enough spectrum to deploy 3G."); Greczyn, "NTT DoCoMo Enters U.S. Market With 16% Stake in AT&T Wireless," *Communications Daily*, at 4 (Dec. 1, 2000) ("[AT&T Wireless Chairman John] Zeglis stressed that [AT&T Wireless] didn't need more licenses to carry out 3G plans."). To the extent that some first generation cellular providers are constrained from making the most efficient use of their spectrum by the Commission's policy of requiring the offering of analog service, WCA endorses the call for an elimination of that policy. See The 2000 Biennial Regulatory Review, CC Docket No. 00-175, FCC 00-456, at ¶¶ 67-70 (rel. Jan. 12, 2000).

^{140/} See *Public Notice*, "C and F Block Broadband PCS Auction Closes," DA 01-211 (rel. Jan. 29, 2001).

^{141/} See *NPRM* at ¶ 50.

and the 30 megahertz of spectrum at 747-762 MHz and 777-792 MHz which is scheduled for auction on September 12, 2001.^{142/}

And, finally there are bands that the *NPRM* is suggesting for reallocation to 3G usage that would mitigate any need to address the 2.1 and 2.5 GHz bands – most notably the 1710-1755 MHz band that is to become available for commercial use in 2004 pursuant to the Omnibus Budget Reconciliation Act of 1993. In addition, 95 MHz of spectrum in the 1755-1850 MHz band is being examined for potential reallocation to 3G.^{143/}

In sum, even if the Commission were to determine that mobile carriers require additional spectrum for 3G services, ample spectrum is already or will soon be available outside of the 2.1 and 2.5 GHz bands. This presents the Commission with an opportunity to satisfy its broader objective of promoting the development of *all* wireless services, in that it allows for a spectrum allocation plan that provides additional spectrum for 3G *and* fully preserves the 2.1 and 2.5 GHz bands for MDS/ITFS service. When weighed against the alternative of relocating MDS/ITFS incumbents out of that spectrum and the enormous economic and public interest costs thereof, the merits of this “win-win” approach are self-evident.

^{142/} See *id.* at ¶ 38; see also *Auction of Licences for the 747-762 and 777-792 MHz Bands Postponed Until September 12, 2001*, DA 01-266, Public Notice (rel. Jan. 31, 2001). This spectrum was cited as a particularly viable candidate for new services in the *Commission's Spectrum Policy Statement*. See *In the Matter of Principals for Reallocation of Spectrum to Encourage the Development of Telecommunications Technologies for the New Millennium (Policy Statement)*, 14 FCC Rcd 19868, 19873 & n.5 (1999) (the “*Spectrum Policy Statement*”).

^{143/} See *NPRM* at ¶¶ 45-46. The mobile industry has identified this spectrum as its “first choice” for additional spectrum. Greczyn, “Wireless Industry Eyes Military Spectrum as First Choice for 3G,” *Communications Daily*, at 1 (Feb. 14, 2001).

2. The 2.1 and 2.5 GHz Bands Should Not Be Targeted For Reallocation in the Name of Global Harmonization.

The mobile industry has asserted that “global harmonization” is necessary to the success of 3G. Even if that is the case, WCA emphasizes that the reallocation of the 2.1 and 2.5 GHz bands for 3G would not advance global harmonization.^{144/}

At the outset, WCA notes that the development and manufacturing of a common 3G platform and compatible handsets are highly unlikely because the mobile industry has not selected a uniform interface standard. As the *NPRM* recognizes, 3G is a set of five radio interfaces for IMT-2000 that are not all compatible with one another.^{145/}

Moreover, the Commission’s decision not to mandate any particular usage for spectrum designated for advanced services undermines any suggestion that reallocation of the 2.1 and 2.5 GHz bands would promote global harmonization.^{146/} Not only will the Commission not mandate the use of any particular 3G radio interface, it will not mandate that licensees utilize any of those interfaces at all. Therefore, there is no basis for the Commission to assume that, if it retakes some or all of the

^{144/} See, e.g., Comments of Verizon Wireless, RM-9920, at 6 (filed Aug. 28, 2000); Comments of AT&T Wireless, RM-9920, at 4 (filed Aug. 28, 2000); Comments of The CDMA Development Group, RM-9920, at 2 (filed Aug. 28, 2000).

^{145/} See, e.g., Mathias, “Will ‘Mobile, Broadband Wireless’ Redefine Information Access Technology?” *Business Communications Review*, at 14 (March 1, 2000) (“[W]e have yet another set of alphabet-soup acronyms to deal with, and little hope of a single uniform technology across a single uniform set of frequencies worldwide. As with 2.5G, each major cellular technology will evolve along its own path.”). It is this lack of standards, more than anything else, that will prevent a single handset from being used by the relative handful of globe-trotters who are interested in global roaming capabilities.

^{146/} See *NPRM* at ¶ 13 (“We are proposing a flexible allocation approach for the provision of advanced wireless service . . . [which] will allow licensees freedom in determining the services to be offered and the technologies to be used in providing those services.”).

2.1 and 2.5 GHz bands and reauctions them to new licensees, they will necessarily deploy a common technology.

If the mobile industry wants to provide global roaming capabilities, Americans will be able to engage in global roaming in the future even if the Commission does not to reallocate the 2.1 and 2.5 GHz bands. The *NPRM* acknowledges that 70 MHz of spectrum is already available to the mobile industry “for introduction of advanced wireless services and for equipment that can be used for roaming domestically and internationally.”^{147/} And, the Commission has previously indicated that reallocation of the 2110-2150 MHz band for 3G “would facilitate international roaming.”^{148/} Moreover, the broadband PCS allocation in the United States is included within spectrum identified by the ITU as “intended for use, on a worldwide basis, by administrations wishing to implement [IMT-2000].”^{149/} Indeed, as pointed out in a recent letter to the Commission from Nortel Networks, a prominent global supplier of wireless equipment:

European Administrations are currently using the 1.7 GHz band for GSM 1800. Global use of the 1.7 GHz band would increase pressure on European Administrations to allow present GSM 1800 systems to evolve to 3G, creating increased market opportunities for U.S. manufacturers. That evolution, along with a similar use in the Americas, would go a long way towards spectrum harmonization. A similar situation exists in the Americas in the 1.9 GHz band as PCS systems evolve to 3G, and the use of that band becomes more harmonized with the recently auctioned 3G European licenses.^{150/}

^{147/} *NPRM* at ¶ 36.

^{148/} *Spectrum Policy Statement*, 14 FCC Red at 19878 (citing the fact that the band is included within spectrum identified for 3G at WARC-92).

^{149/} Final Acts of World Radiocommunications Conference (WRC-2000) at n.S538.

^{150/} Letter from Raymond L. Strassburger, Vice President, Global Government Relations, Telecom, Internet and Advanced Technology Policy, Nortel Networks, to Thomas J. Sugrue, Chief, Wireless Telecommunications Bureau, Federal Communications Commission, Re: Spectrum for Third Generation

While the Commission will undoubtedly be told that none of these approaches are ideal for the mobile community, the burdens they impose on 3G pale in comparison to the devastating impact reallocation of the 2.1 and 2.5 GHz bands would have on the fixed wireless industry.

The Commission acknowledges that “it appears very unlikely that a single band plan can be adopted on a global basis [for 3G].”^{151/} Indeed, not even *regional* harmonization will be promoted by reallocation of the 2.5 GHz band in the United States: Canada, Mexico, and a number of other countries in the Western Hemisphere have allocated the 2.5 GHz band for MDS, not 3G, and have indicated that they do not intend to make the 2.5 GHz band available for 3G.^{152/}

Furthermore, to the best of WCA’s knowledge, although Europe is frequently cited as the primary proponent of using the 2.5 GHz band for 3G, not a single European country has allocated or licensed the 2.5 GHz band for 3G.^{153/} This is true not only for the countries listed in the *NPRM*, but is also true of a number of countries whose 3G spectrum plans are not listed, including Italy,^{154/}

Wireless, at 2 (Nov. 9, 2000) (the “Nortel Letter”).

^{151/} *NPRM* at ¶ 24 n.47.

^{152/} See *NPRM* at Appendix D (stating that Canada has identified the 2.5 GHz band for multipoint communication service (2500-2596 MHz) and MDS (broadcasting) (2596-2686 MHz), and has “extensive licensing activity for MCS and MDS underway in this band”); *Id.* ¶ 24 n. 47 (“Canada, Mexico, and several other countries from the Americas have indicated that they are likely to provide additional 3G spectrum in the 1710-1850 MHz band and that, in particular, the 2500-2690 MHz band would not be available for 3G systems in their countries.”).

^{153/} *FCC Interim Report* at Appendix 2.3. These countries include Belgium, the Czech Republic, Denmark, Finland, Germany, Ireland, Portugal, Spain, Sweden, Switzerland and the United Kingdom. The *FCC Interim Report* also confirms that Australia, Hong Kong and New Zealand have not allocated or licensed the 2.5 GHz band for 3G. *Id.*

^{154/} Frequency bands 1900-1980 MHz, 2100-2155 MHz, and 2170-2200 MHz shall be made available in Italy for IMT-2000 after January 1, 2002. See Italy’s National Allocation Table (Unofficial English version), at <http://www.ero.dk/euroweb/tables.html> (last visited Feb. 21, 2001); Italy commenced an auction in August 2000, awarding five 3G licenses in October. See “IMT-2000 Licensing Condition and Status, A selected

Japan,^{155/} the Netherlands,^{156/} Norway^{157/}, and Poland.^{158/} Indeed, as is reflected in Appendix D to the *NPRM*, the Europeans do not anticipate using the 2.5 GHz band for 3G in the near-term, and may only make it available in some geographic areas in order to facilitate sharing with existing users. Similarly, the Nortel Letter points out that “[t]he use of the 2.5 GHz band [for 3G] would not promote roaming. European Administrations have openly stated that they will not consider 2.5 GHz for use until the 2010-2015 time frame.”^{159/}

Finally, the Commission has observed that notwithstanding the absence of global harmonization, global roaming could be facilitated by multiband phones.^{160/} In fact, multiband

regional overview”, UMTS Forum, at www.umts-forum.org/licensing.html (last visited Feb. 21, 2001).

^{155/} See Frequency Allocation Table of Japan, Ministry of Posts and Telecommunications of Japan (January 1999), at <http://info.mpt.go.jp/eng> (last visited Feb. 21, 2001). Japan has awarded licenses for IMT-2000 and has allocated the 1920-1980 MHz and 2110-2170 MHz bands. On June 12, 2000, Japan issued three licenses to NTT DoCoMo, Japan Telecom and KDD+IDO for test operations with full services scheduled to start in 2001. NTT DoCoMo intends to offer 3G services from May 2001. See IMT-2000 Licensing Conditions and Status - A selected regional overview, UMTS Forum, at <http://www.umts-forum.org/licensing.html> (last visited Feb. 21, 2001).

^{156/} See Ministry of Transport, Public Works and Water Management, Radiocommunications Agency (Oct. 5, 2000) at http://www.rdr.nl/nfr/main_nfr_uk.html (last visited Feb. 21, 2001).

^{157/} See Norwegian Table of Frequency Allocations (March 14, 2000), at http://www.npt.no/english/E_fagomraader/frekvensforvaltning/tabell.html (last visited Feb. 21, 2001). 3G licenses were awarded in Norway in early December 2000 via “beauty contest.” The 3G bands in Norway are 1920-1980 MHz/2110-2170 MHz in the paired band and 1900-1920 MHz in the unpaired band. See “Invitation to Tender for Licences for the Development and Operation of a Third Generation Mobile Telecommunications System in Norway,” Ministry of Transport and Communications, at 6 (May 31, 2000), at http://www.npt.no/english/E_fagomraader/frekvensforvaltning/3G/index.html (last visited Feb. 21, 2001).

^{158/} See <http://www.ero.dk/eroweb/tables.html> (last visited Feb. 21, 2001) to access Poland’s frequency allocation table; see also “Polish UMTS tender canceled - but it’s good news, says analysts” (Dec. 6, 2000), at <http://www.totaltele.com/vprint.asp?txtID=34592/>.

^{159/} Nortel Letter at 1.

^{160/} *NPRM* at ¶ 24 n.47.

handsets are now a staple of the mobile wireless marketplace, and can be manufactured at only marginal increased cost compared to single band handsets.^{161/} Moreover, emerging software defined radio technology may moot this entire discussion.^{162/} Thus, the future of global roaming is hardly dependent upon any reallocation of the 2.1 and 2.5 GHz bands.

III. CONCLUSION.

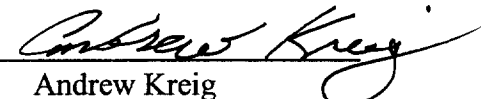
The Commission is to be applauded for its efforts over the past five years to promote the use of MDS/ITFS spectrum at 2.1 and 2.5 GHz for high-speed Internet access and other broadband services. In reliance on those efforts, billions of dollars have been expended to bring MDS/ITFS-based broadband services to the marketplace – a marketplace that is desperately seeking a provider of service to those who are unserved or underserved, as well as a source of competition to the cable and ILEC wireline duopoly. The *NPRM* properly recognizes that this proceeding cannot be merely about finding spectrum for mobile 3G use, but must address the public interest benefits of a full panoply of advanced wireless services, including MDS/ITFS-based broadband services. For the reasons set forth above, WCA reiterates that the benefits of those MDS/ITFS-based broadband services to residential, commercial and educational users are so compelling that any possible reason for reallocating the 2.1 and 2.5 GHz bands for 3G use pales in comparison. Therefore, WCA calls upon the Commission to expeditiously make clear that it will not reallocate the 2.1 and 2.5 GHz

^{161/} See, e.g., Rupley, “Calling the Web, Smart Phones Get Smarter,” *PC Magazine* (Dec. 14, 1999) (noting that Qualcomm, Samsung, Touchpoint, and Neopoint all offer dual-band phones that can access the Internet).

^{162/} See *Authorization and Use of Software Defined Radios*, ET Docket No. 00-47 (2000).

bands and will allow the MDS/ITFS-based broadband industry to flourish free from the current cloud of regulatory uncertainty.

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February 22, 2001

**HARTER, "INTERFERENCE TO 3G SYSTEMS FROM ITFS/MDS SYSTEMS
SHARING THE SAME FREQUENCIES"**

Interference to 3G Systems from ITFS/MDS Systems Sharing the Same Frequencies

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Introduction and Summary

The purpose of this paper is to analyze the potential for interference to proposed 3G systems from ITFS/MDS systems sharing the same frequency of operation. This analysis examines all of the proposed IMT-2000 standards for which interference thresholds were available, based on the technical specifications set forth in the January 25, 2001 draft Report of the 3G Characteristics Group of the Industry/Government Informal Working Group (the "3G Characteristics Report").¹ The analyses calculate the required separation distances between proposed 3G base and mobile units and ITFS/MDS base stations and customer premise units (response stations). As summarized in Appendix 1, substantial separation from MDS/ITFS systems is required in order for 3G systems to operate on a cochannel basis without interference.

Analysis

Table 1 to the 3G Characteristics Report defines two interference thresholds for base and mobile 3G units. Threshold 1 is defined by the received signal level being at sensitivity, with an interference-to-noise equal to -6 dB, resulting in a 10 percent loss in the range of the system. The received signal level being 10 dB above the sensitivity point with the signal-to-noise ratio resulting in a bit error rate of 10⁻³ defines threshold 2. These thresholds were not defined for some categories of 3G technologies and therefore calculations were not performed in all cases.

Using these interference thresholds, the separation distance between 3G receivers and ITFS/MDS transmitters necessary to avoid interference can be calculated. For purposes of the calculations, 3G mobile units were assumed to utilize a receive antenna with unity gain and hub antennas were assumed to utilize an antenna with 17 dBi gain.

ITFS/MDS base stations and response stations (subscriber CPE) operate with a variety of power levels. The maximum power level allowed by the FCC for stations that utilize an omnidirectional transmit antenna is 2000 watts EIRP in a 6 MHz bandwidth. In those situations where the station is transmitting an analog signal, this is measured as peak power, while for digital transmissions it is

¹ There is no reason to believe that the results would be significantly different for the cases where interference thresholds were not included in the 3G Characteristics Report.

measured as average power. Most single cell ITFS/MDS systems, the most prevalent type to date, operate with EIRP levels between 500 and 2000 watts. Individual cells within cellular systems will operate with a wider range of power levels, depending on the number of cells, the service area of the particular cell, and the propagation characteristics of the market. Therefore, three power levels, 2000, 500 and 100 watts EIRP, were considered in the analysis.

ITFS/MDS response stations (the CPE) also operate with a variety of power levels and bandwidths. The maximum power level allowed by the FCC is 2000 watts in a 6 MHz bandwidth. As the bandwidth is reduced or increased, the maximum power level of the upstream transmitter is adjusted based on equivalent power spectral density. For purposes of this analysis, a typical power level of 668 watts EIRP in a 2 MHz bandwidth was utilized.

Attached as Appendix 1 is a table showing the separation distance required between an MDS/ITFS transmitter and each proposed 3G technology. These calculations assume an unobstructed electrical path to the radio horizon limit of 161 kms. Calculations resulting in separation distances beyond the radio horizon were limited to 161 kms. Also, the worst case geometry resulting in bore sighted conditions between the transmit and receive antenna was assumed. No cross polarization discrimination was considered since ITFS/MDS systems use both horizontal and vertical polarization liberally to maintain isolation with adjacent markets. In addition, these studies did not consider the effects of multiple ITFS/MDS radiators within a market. Note however that in all markets there will inevitably be multiple response stations (CPE) operating simultaneously and that in multicell markets, multiple downstream transmission may be occurring on the same frequency at the same time. A more detailed analysis accumulating the signal levels generated by these multiple radiators was not conducted in light of the compelling results when even a single radiator is considered.

Interference to 3G Mobile Receivers

As the results show, interference threshold 1 for mobile 3G receivers is only met when the receiver is isolated from the ITFS/MDS base or CPE transmitters using the radio horizon for separation. The required separation distance is always beyond the radio horizon and is therefore for purposes of Appendix 1 is limited to the defined radio horizon distance of 161 kms.

Likewise, for a majority of the cases analyzed based on interference threshold 2 the separation requirement for mobile 3G receivers remains at or very close to the radio horizon. However, when the ITFS/MDS base station power is lowered to 100 watts EIRP, the separation distance is reduced to 66 kms for CDMA 2000 1X. Note, however that this power level of 100 watts is only likely to be employed by MDS/ITFS multicell systems. Therefore, as a practical matter it will be necessary to consider the accumulation of signals from multiple MDS/ITFS cells and greater separation will be required to protect the 3G system.

Interference to 3G Base Station Receivers

The results show for all cases at interference threshold 1 that the level of interference into 3G hubs requires separation distances equal to the radio horizon. When the interference threshold is relaxed to threshold 2, certain 3G technologies will allow a 3G base station to operate within 102 kms or a 100 watt MDS/ITFS base station.

Conclusions

These calculations prove conclusively that cochannel frequency sharing between 3G and ITFS/MDS systems is not a practical solution. MDS/ITFS systems are operating in most markets across the country, and the required separation distances would only permit 3G systems to operate without interference in the most rural areas.

Appendix 1 – Interference to 3G Receivers from ITFS/MDS Transmitters

3G System Parameters			ITFS/MDS Base Station (2000 Watts)			ITFS/MDS Base Station (500 Watts)			ITFS/MDS Base Station (100 Watts)		
Protected Receiver Type	Modulation Type	Bandwidth (MHz)	Bandwidth (MHz)	EIRP (dBm)	Separation 1 (kms) ⁽¹⁾	Separation 2 (kms) ⁽²⁾	Bandwidth (MHz)	EIRP (dBm)	Separation 1 (kms) ⁽¹⁾	Separation 2 (kms) ⁽²⁾	Separation 2 (kms) ⁽²⁾
Mobile	CDMA 2000 1X	1.25	6	63	161	161.0	6	57	161	148.2	66
	CDMA 2000 3X	3.75	6	63	161	161.0	6	57	161	161.0	72
	UWC-136	0.03	6	63	N/A	N/A	6	57	N/A	N/A	N/A
	UWC-136	0.2	6	63	N/A	N/A	6	57	N/A	N/A	N/A
	TD-CDMA	5	6	63	161	161.0	6	57	161	161.0	105
	W-CDMA	5	6	63	161	161.0	6	57	161	161.0	74
Base Station	CDMA 2000 1X	1.25	6	63	161	161.0	6	57	161	161.0	105
	CDMA 2000 3X	3.75	6	63	161	161.0	6	57	161	161.0	102
	UWC-136	0.03	6	63	161	161.0	6	57	161	161.0	115
	UWC-136	0.2	6	63	161	161.0	6	57	161	161.0	118
	TD-CDMA	5	6	63	161	161.0	6	57	161	161.0	161
	W-CDMA	5	6	63	N/A	N/A	6	57	N/A	N/A	N/A

(1) Separation required to limit loss in range of 3G system to 10%.

(2) Separation required to keep desired signal 10 dB above sensitivity and S/(I+N) for a 10⁻³ BER.